

## KEY CONCEPTS SUMMARY



Natural ecosystems are of great value to humans.

- Ecosystems provide us with products as well as other ecosystem services. (3.1)
- Ecosystem services are free and renewable. (3.1)
- The total economic value of ecosystems is in the trillions of dollars. (3.1)



Ecosystems are at equilibrium but can change over time.

- Large ecosystems are usually in equilibrium, with biotic and abiotic features remaining relatively constant over time. (3.2)
- Succession is the gradual process of changes in an ecosystem over time. It is initiated by a disturbance. (3.2)



Biodiversity describes the variety and abundance of life in an ecosystem.

- Biodiversity is the variety of life in a particular ecosystem. (3.3)
- Biodiversity of many ecosystems is threatened by human activities. (3.3)
- Many species are going extinct. (3.3)
- At-risk species are categorized as extirpated, endangered, threatened, or of special concern. (3.3)



Many human activities impact and threaten the sustainability of natural ecosystems.

- The major cause of species loss is habitat destruction and fragmentation. (3.4)
- Invasive species can outcompete native species and upset food webs. (3.5)
- Pollution threatens the health of many plant and wildlife populations. (3.6)
- Much of southern Ontario's original forest has been converted to agricultural and urban land uses. (3.4)
- Invasive species have been introduced intentionally and accidentally. (3.5)



Water, land, and air pollution cause health and economic problems.

- The release of harmful materials into the environment is called pollution. (3.6)
- Acid precipitation affects terrestrial and aquatic ecosystems and is detrimental to human health and infrastructure such as buildings. (3.6)
- Oil spills and plastics cause significant damage to marine and freshwater ecosystems. (3.6)
- Massive mats of floating plastic trash have formed in the oceans. (3.6)

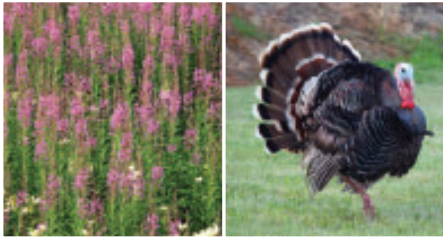


Plant and animal resources should be used in a sustainable manner.

- Forests are harvested using clear-cutting, shelterwood cutting, or selective cutting methods. (3.7)
- Harvesting of wildlife must be done in a sustainable and ethical manner. (3.7)
- Sustainable forestry practices sustain ecosystems and maintain biodiversity. (3.7, 3.8)
- A supply and demand based economy can place added pressure on rare and valuable natural resources. (3.7)

## WHAT DO YOU THINK NOW?

You thought about the following statements at the beginning of the chapter. You may have encountered these ideas in school, at home, or in the world around you. Consider them again and decide whether you agree or disagree with each one.



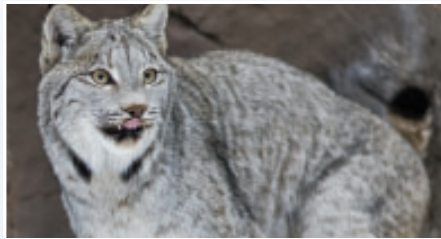
- 1** Forest fires benefit these species.  
**Agree/disagree?**



- 4** Human demand for safe, clean water is a major concern on a global scale but not an issue in Canada.  
**Agree/disagree?**



- 2** Pollution is the greatest human-caused threat to natural ecosystems.  
**Agree/disagree?**



- 5** Ontario has a healthy wildlife population with very few “at-risk species.”  
**Agree/disagree?**



- 3** Lake trout and a panther grouper are able to share the same habitat.  
**Agree/disagree?**



- 6** Humans enjoy natural ecosystems, but we do not rely on them in our daily lives.  
**Agree/disagree?**

How have your answers changed since then?  
What new understanding do you have?

## Vocabulary

equilibrium (p. 80)  
succession (p. 80)  
primary succession (p. 80)  
secondary succession (p. 80)  
biodiversity (p. 83)  
species richness (p. 83)  
extinct (p. 83)  
extirpated (p. 85)  
endangered (p. 85)  
threatened (p. 85)  
special concern (p. 85)  
invasive species (p. 91)  
pollution (p. 96)  
acid precipitation (p. 96)  
neutralize (p. 96)  
bioremediation (p. 99)  
stewardship (p. 105)

## BIG Ideas

- ✓ Ecosystems are dynamic and have the ability to respond to change, within limits, while maintaining their ecological balance.
- ✓ People have the responsibility to regulate their impact on the sustainability of ecosystems in order to preserve them for future generations.